

REMARKS/ARGUMENTS

Claims 1-8, 18-90 stand canceled.

In view of the new grounds of rejection, the terminal disclaimer submitted August 16, 2005 is hereby withdrawn.

Claim 15 has been amended in accordance with the Examiner's comment. Newly added claims 91, 92 depend from claim 9. Newly added claims 93, 94 depend from claim 12. The amendment leaves claims 9-17, 91-94 pending.

Applicant notes the Examiner's comment in the Office Action, page 2, clause 1, regarding adding --end-- after "upstream" and "downstream" in claim 9, line 15, and also noting claims 12, 16-17. Applicant has carefully reviewed the noted claims, and believes that the language is accurate and clear as is. In claim 9, line 15, the noted first face (274 or 278, Fig. 13) faces upstream, which is leftwardly in Fig. 13. The noted second face (276 or 280, Fig. 13) faces downstream, which is rightwardly in Fig. 13. The Examiner is invited to contact applicant's undersigned attorney if further clarification or alternate language is deemed desirable.

Claims 9-17 have been rejected under 35 U.S.C. §102(b) over Nagai et al. U.S. Patent 5,863,311. Consideration of claims 9-17, 91-94 in view of the following remarks is respectfully requested.

Nagai et al. '311 shows in Fig. 1B a filter element 1 having alternating exhaust incoming spaces 3 and exhaust outgoing spaces 4, Col. 7, lines 25-26. End plates 6 alternately close the inlet and outlet ends of the spaces. Fig. 2 shows untapered column-shaped channels with alternating exhaust incoming spaces 3 and exhaust outgoing spaces 4. Fig. 3 shows conical tapered column-shaped channels with alternating exhaust inlet spaces 3 and exhaust outlet spaces 4. Fig. 4 shows air permeable reinforcing members 2-1 inserted in the exhaust outgoing spaces 4. Fig. 5 shows reinforcing members 2-2 at both ends. Fig. 6 has both the reinforcing members 2-1 and 2-2. Fig. 7 is similar to Fig. 3 and shows reinforcing members 2-2. Fig. 8 has air permeable reinforcing members 2-1 and 2-3 inserted in the exhaust incoming spaces 3 and exhaust outgoing spaces 4. Fig. 11 is an enlarged sectional view showing a particulate trapping

layer 301 made of a filter material, and a plurality of catalyst-carrying layers such as layers 302 and 303, Col. 8, lines 55-58. The various experiments are noted beginning at Col. 9.

Claim 9 defines an exhaust aftertreatment combined filter and catalytic converter (e.g. 202, Figs. 11+) having a plurality of flow channels (208) each having both: a) a flow-through channel (210) catalytically reacting with exhaust (204); and b) a wall-flow channel (212) trapping particulate. Claim 9 requires a plurality of sheets, at least one (218) of which is a filter media sheet, the sheets defining the plurality of flow channels (208), including flow-through channels (210) catalytically reacting with the exhaust (204), and including wall-flow channels (212) in the same such flow channels (208) as the flow-through channels (210) and passing exhaust (204) through the filter media sheet (218) and trapping particulate thereat. Claim 9 further requires that the exhaust (204) flows axially (222) through the exhaust aftertreatment combined filter and catalytic converter (202), and that the flow-through channels (210) and the wall-flow channels (212) have axially overlapped channel sections (212a, 210a) in the flow channels (208). Claim 9 further requires that the exhaust flows axially (222) through the exhaust aftertreatment combined filter and catalytic converter (202) from an upstream end (302) to a downstream end (306), and that the filter media sheet (218) has a first face (274 or 278) facing upstream and has a second face (276 or 280) facing downstream, and that each flow-through channel (210) has a portion extending downstream (e.g. rightwardly in Figs. 12, 13) from the second face (276 or 280) of the filter media sheet (218), and that the exhaust aftertreatment combined filter and catalytic converter (202) has first, second and third serially sequential surfaces in each flow channel (208), and that the exhaust (204) flows firstly along and through the first sequential surface (274 or 278), then secondly along and through the second sequential surface (276 or 280), then thirdly along the third sequential surface (282 or 284), and that the defined first face (274 or 278) of the filter media sheet (218) be the first sequential surface, and that the defined second face (276 or 280) of the filter media sheet (218) be the second sequential surface, and that the overlapped section (210a) of the flow-through channel (210) be the third sequential surface (282 or 284). Applicant has carefully reviewed Nagai et al. '311, but can find no disclosure nor suggestion of such combination. It is hoped that the above explanation clarifies the distinctiveness of the combination defined in claim 9. The Examiner is

invited to contact applicant's undersigned attorney with any questions or comments. Consideration and allowance of claim 9 is respectfully requested.

Claim 10 depends from claim 9 and is believed allowable for the reasons noted above. Furthermore, claim 10 requires that at least one of the first, second and third serially sequential surfaces (274, 276, 282) is catalytically treated.

Claim 11 depends from claim 10 and is believed allowable for the reasons noted above. Furthermore, claim 11 requires that each of the first, second and third serially sequential surfaces (274, 276, 282) is catalytically treated.

Claim 12 defines an exhaust aftertreatment combined filter and catalytic converter (202, Figs. 11+) including a plurality of flow channels (208) each having both: a) a flow-through channel (210) catalytically reacting with exhaust (204); and b) a wall-flow channel (212) trapping particulate, and requires that the exhaust aftertreatment combined filter and catalytic converter (202) have a plurality of sheets, at least one (218) of which is a filter media sheet, and that the sheets define the plurality of flow channels (208), including flow-through channels (210) catalytically reacting with the exhaust (204) and including wall-flow channels (212) in the same such flow channels (208) as the flow-through channels (210) and passing exhaust (204) through the filter media sheet (218) and trapping particulate thereat. Claim 12 further requires that the exhaust (204) flows axially through the exhaust aftertreatment combined filter and catalytic converter (202), and that the flow-through channels (210) and the wall-flow channels (212) have axially overlapped channel sections (212a, 210a) in the flow channels (208). Claim 12 further requires that the exhaust (204) flows axially (222) through the exhaust aftertreatment combined filter and catalytic converter (202) from an upstream end (302) to a downstream end (306), and that the filter media sheet (304, Fig. 16; 320, Fig. 17) have a first face (344, 348) facing upstream and have a second face (346, 350) facing downstream, and that each flow-through channel has a portion (362) extending upstream (leftwardly in Figs. 16, 17) from the first face (344, 348) of the filter media sheet (304), and that the exhaust aftertreatment combined filter and catalytic converter (202) have first, second and third serially sequential surfaces in each flow channel (208), and that exhaust (204) flows firstly along the first sequential surface (362), then secondly along and through the second sequential surface

(344 and/or 348), then thirdly along and through the third sequential surface (346 and/or 350), and that the defined portion (362) of the flow-through channel is the first sequential surface (362), and that the first face (344 or 348) of the filter media sheet (304) is the second sequential surface (344 or 348), and that the second face (346 or 350) of the filter media sheet (304) is the third sequential surface (346 or 350). Applicant has carefully reviewed Nagai et al. '311 but has been unable to find any such subject matter therein. It is hoped that the above explanation clarifies the distinctiveness of the subject matter of claim 12. Consideration and allowance of claim 12 is respectfully requested.

Claim 13 depends from claim 12 and is believed allowable for the reasons noted above. Furthermore, claim 13 requires that at least one of the first, second and third serially sequential surfaces (362, 344, 346) is catalytically treated.

Claim 14 depends from claim 13 and is believed allowable for the reasons noted above. Furthermore, claim 14 requires that each of the first, second and third serially sequential surfaces (362, 344, 346) is catalytically treated.

Claim 15 defines an exhaust aftertreatment combined filter and catalytic converter (202, Figs. 11+) having a plurality of flow channels (208) each having both: a) a flow-through channel (210) catalytically reacting with exhaust (204); and b) a wall-flow channel (212) trapping particulate, and requires that the exhaust aftertreatment combined filter and catalytic converter (202) have a plurality of sheets, at least one (218) of which is a filter media sheet, and that the sheets define the plurality of flow channels (208), including flow-through channels (210) catalytically reacting with the exhaust (204) and including wall-flow channels (212) in the same such flow channels (208) as the flow-through channels (210) and passing exhaust (204) through the filter media sheet (218) and trapping particulate thereat. Claim 15 further requires that the exhaust (204) flows axially (222) through the exhaust aftertreatment combined filter and catalytic converter (202), and that the flow-through channels (210) and the wall-flow channels (212) have axially overlapped channel sections (212a, 210a) in the flow channels (208), and that the combination of the flow-through channels (210) and the wall-flow channels (212) have three catalytically treated surfaces (278, 280, 284) in each flow channel (208). It is believed that this distinctive combination is allowable.

Claim 16 depends from claim 15 and is believed allowable for the reasons noted above. Furthermore, claim 16 requires that the exhaust flows axially (222) through the exhaust aftertreatment combined filter and catalytic converter (202) from an upstream end (302) to a downstream end (306), and that the filter media sheet (218) have a first face (278) facing upstream and have a second face (280) facing downstream, and that each flow-through channel (210) have a portion extending downstream (rightwardly in Figs. 12, 13) from the second face (280) of the filter media sheet (218), and that the three catalytically treated surfaces comprise first, second and third serially sequential surfaces (278, 280, 284), and that the exhaust flows firstly along and through the first sequential catalytically treated surface (278), then secondly along and through the second sequential catalytically treated surface (280), then thirdly along the third sequential catalytically treated surface (284), and that the first face (276) of the filter media sheet (218) be the first sequential catalytically treated surface (276), and that the second face (280) of the filter media sheet (218) be the second sequential catalytically treated surface (280), and that the overlapped section (210a) of the flow-through channel (210) be the third sequential catalytically treated surface (284). Consideration and allowance of claim 16 is respectfully requested.

Claim 17 depends from claim 15 and is believed allowable for the reasons noted above. Furthermore, claim 17 requires that the exhaust flows axially (222) through the exhaust aftertreatment combined filter and catalytic converter (202) from an upstream end (302) to a downstream end (306), and that the filter media sheet (304, Fig. 16; 320, Fig. 17) have a first face (348) facing upstream and have a second face (350) facing downstream, and that each flow-through channel have a portion (362) extending upstream (leftwardly in Figs. 16, 17) from the first face (348) of the filter media sheet (304), and that the three catalytically treated surfaces comprise first, second and third serially sequential surfaces (362, 348, 350), and that the exhaust flows firstly along the first sequential catalytically treated surface (362), then secondly along and through the second sequential catalytically treated surface (348), then thirdly along and through the third sequential catalytically treated surface (350), and that the defined portion (362) of the flow-through channel be the first sequential catalytically treated surface (362), and that the first face (348) of the filter media sheet (304) be the second sequential catalytically treated

surface (348), and that the second face (350) of the filter media sheet (304) be the third sequential catalytically treated surface (350). Consideration and allowance of claim 17 is respectfully requested.

Claim 91 depends from claim 9 and is believed allowable for the reasons noted above. Furthermore, with the Examiner's attention respectfully directed to Figs. 11 and 12, claim 91 requires that the exhaust (204) flow axially along an axial flow direction along an axis (222), and requires first, second and third sheets (214, 216, 218), and the second sheet (216) be pleated and forming with the first sheet (214) a plurality of axially extending flow channels (208), and that the second sheet (216) have a plurality of pleats (224) defined by wall segments (226, 228) extending in alternating manner between pleat tips (230, 232, 234, 236, Fig. 12) at axially extending bend lines (238, 240, 242, 244), and that the pleat tips (246, 248) on one side (e.g. bottom) of the second sheet (216) be in contiguous relation with the first sheet (214), and further that the third sheet (218) have a plurality of pleats (250) defined by wall segments (252, 254) extending in zig-zag manner between pleat tips (256, 258) at transversely extending bend lines (260, 262, Fig. 12) which extend transversely to the defined axis (222) and transversely to the first sheet (214), and that the first sheet (214) extend axially (222) and extend laterally (266, Fig. 12) relative to the transversely extending bend lines (260, 262) of the pleat tips (256, 258) of the third sheet (218). Consideration and allowance of claim 91 is respectfully requested.

Claim 92 depends from claim 91 and is believed allowable for the reasons noted above. Furthermore, claim 92 requires that the defined axis (222) and the defined transverse extension (260, 262) of the pleat tips (256, 258) of the third sheet (218) and the defined lateral extension (266) of the first sheet (214) are all orthogonal relative to each other. This is not present nor suggested in Nagai et al. '311.

Claim 93 depends from claim 12 and is believed allowable for the reasons noted above. Furthermore, claim 93 requires that the exhaust (204) flow axially along an axial flow direction along an axis (222), and requires first, second and third sheets (214, 216, 218), and that the second sheet (216) be pleated and form with the first sheet (214) a plurality of axially extending flow channels (208), and that the second sheet (216) have a plurality of pleats (224) defined by wall segments (226, 228) extending in alternating manner between pleat tips (230,

Appl. No. 10/075,035
Amendment dated January 5, 2006
Reply to Office action of October 26, 2005

232, 234, 236, Fig. 12) at axially extending bend lines (238, 240, 242, 244), and that the pleat tips (246, 248) on one side (e.g. bottom) of the second sheet (216) be in contiguous relation with the first sheet (214), and that the third sheet (218) have a plurality of pleats (250) defined by wall segments (252, 254) extending in zig-zag manner between pleat tips (256, 258) at transversely extending bend lines (260, 262, Fig. 12) which extend transversely to the defined axis (222) and transversely to the first sheet (214), and that the first sheet (214) extend axially (222) and extend laterally (266, Fig. 12) relative to the transversely extending bend lines (260, 262) of the pleat tips (256, 258) of the third sheet (218). Consideration and allowance of claim 93 is respectfully requested.

Claim 94 depends from claim 93 and is believed allowable for the reasons noted above. Furthermore, claim 94 requires that the defined axis (222) and the defined transverse extension (260, 262) of the pleat tips (256, 258) of the third sheet (218) and the defined lateral extension (266) of the first sheet (214) are all orthogonal relative to each other. This is nowhere shown nor suggested in Nagai et al. '311. Consideration and allowance of claim 94 is respectfully requested.

It is believed that this application is in condition for allowance with claims 9-17, 91-94, and such action is earnestly solicited.

Respectfully submitted,

ANDRUS, SCEALES, STARKE & SAWALL, LLP

Michael E. Taken

Michael E. Taken
(Reg. No. 28,120)

100 East Wisconsin Avenue, Suite 1100
Milwaukee, Wisconsin 53202
(414) 271-7590